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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/814,337	03/21/2001	William J. Bolosky	MS1-735US	3684

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EXAMINER

GYORFI, THOMAS A

ART UNIT	PAPER NUMBER
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2135

DATE MAILED: 03/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/814,337

Applicant(s)

BOLOSKY ET AL.

Examiner

Tom Gyorfi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 9-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 9-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-4 and 9-18 remain for examination. The correspondence filed 12/10/04 cancelled claims 5-8.

Response to Arguments

2. Applicant's arguments with respect to claims 1-4 and 9-18 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-4 are rejected under 35 U.S.C. 102(e) as being anticipated by Moulton (U.S. Patent 6,704,730).

Regarding claim 1:

Moulton teaches a method comprising storing files across multiple computers in a distributed file system (col. 4, lines 40-55), making changes to certain files (col. 11, lines 1-10 and Figure 7), collecting the changes made to certain files stored in the distributed file system (col. 10, lines 50-65 and Figure 6), and digitally signing the multiple changes in batch (col. 11, lines 1-10 and Figure 7).

Regarding claim 2:

Moulton teaches the limitations of claim 1 above. In addition, Moulton also teaches computing a hash of data in each file that is affected by the changes, and grouping the hashes together in batch for signing (Figure 7).

Regarding claim 3:

Moulton teaches the limitations of claim 1 above. In addition, Moulton also teaches a data structure, embodied on a computer-readable medium, produced by the method of claim 1 (col. 13, line 30 – col. 14, line 15).

Regarding claim 4:

Moulton teaches the limitations of claim 1 above. In addition, Moulton also teaches one or more computer-readable media comprising computer readable instructions that when executed perform the method of claim 1 (Figure 2).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 9-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moulton, and further in view of Burns (U.S. Patent 6,405,315) and also in view of Chan (U.S. Patent 6,748,538).

Regarding claims 9 and 14:

Moulton discloses a method for a distributed file system storing [encrypted] files across multiple computers comprising:

modifying one or more of the [encrypted] files (col. 5, lines 59-62);

computing a hash value of each modified [encrypted] file (col. 11, lines 1-10 and Figure 7).

collecting the hash values into a group (element 310A of Figure 7); and

computing a hash value for the group (element 404 of Figure 5).

Moulton is silent regarding whether or not the files to be stored in this system are encrypted. However, Burns discloses a distributed file system that handles encrypted files (col. 3, lines 44-52). Burns also teaches that file systems that use encrypted files were already well known in the art (col. 2, lines 25-44). It would have been obvious to

one of ordinary skill in the art at the time the invention was made to include the ability to use encrypted files in the invention disclosed by Moulton. The motivation for doing so would be to increase the security of the file system above that found in established prior art file systems (Burns, col. 2, lines 5-45).

The combination of Moulton and Burns do not teach digitally signing the hash value of the group of hashes. However, Chan teaches this limitation (Chan, col. 4, lines 7-10), as well as the limitations of collecting the hash values into a group and computing the hash of the group (Chan, col. 4, lines 3-7). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the ability of Chan to digitally sign a hash representing a group of hashes of files into the disclosure of Moulton (as modified by Burns). The motivation for doing so would be to better ensure data integrity (Chan, col. 1, lines 55-60), which is also a stated goal of the Moulton invention (Moulton, col. 3, lines 65-67).

Regarding claims 10 and 15:

The combination of Moulton, Burns, and Chan disclose the limitations of claims 9 and 14 above. In addition, Moulton discloses a header and indexing structure including hashes of files and a structure to access the hashes of files, the computing of each [encrypted] file further comprising deriving a hash of the header and at least part of the structure (element 404 of Figure 7).

Moulton does not disclose the use of a metadata stream to store the aforementioned data structure. However, Burns teaches the use of a metadata stream

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to store this information (col. 7, lines 10-30). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a metadata stream as the means to store metadata about the files in the distributed file system disclosed by Moulton. The motivation for doing so would be to logically partition the metadata from the user data, and take advantage of the distributed nature of the file system to store each on separate devices (Burns, col. 7, lines 1-10).

Regarding claims 11 and 16:

The combination of Moulton, Burns, and Chan disclose the limitations of claims 9 and 14 above. In addition, Moulton discloses a header and indexing structure including an indexing tree including hashes of files, branch nodes to access the hashes, and a root node, with instructions to hash as a single composite the header, per user information and the root node (Moulton, col. 11, lines 40-50 and Figure 9).

Moulton does not disclose the use of a metadata stream to store the aforementioned data structure. However, Burns teaches the use of a metadata stream to store this information (col. 7, lines 10-30). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a metadata stream as the means to store metadata about the files in the distributed file system disclosed by Moulton. The motivation for doing so would be to logically partition the metadata from the user data, and take advantage of the distributed nature of the file system to store each on separate devices (Burns, col. 7, lines 1-10).

Regarding claim 12:

The combination of Moulton, Freenet, and Chan disclose the limitations of claim 9. In addition, Moulton discloses a data structure produced by the method of claim 9 (Moulton, col. 13, line 30 – col. 14, line 15).

Regarding claim 13:

The combination of Moulton, Freenet, and Chan disclose the limitations of claim 9. In addition, Moulton teaches that the disclosed invention can be embodied on computer readable media (Moulton, Figure 2).

7. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moulton, and further in view of Chan.

Regarding claim 17:

Moulton discloses a data structure stored on a computer readable medium comprising representations of modifications made to multiple files stored in a distributed file system (Figure 8; changes illustrated on Figure 7).

Moulton is silent regarding a digital signature covering at least part of the representations to indicate that the modifications were made by a user with the signature. However, Chan discloses this limitation (Chan, col. 4, lines 4-10). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a digital signature into the invention disclosed by Moulton, with the motivation

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being to better ensure data integrity (Chan, col. 1, lines 55-60; Moulton, col. 3, lines 65-67).

Regarding claim 18:

Moulton and Chan disclose all the limitations of claim 17 above. In addition, Moulton discloses that the representations comprise hashes of data in each file that is affected by modifications (elements 310A and 404A of Figure 7).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 6,098,079 issued to Howard: File Version Reconciliation Using Hash Codes;

U.S. Patent 5,991,414 issued to Garay et al.: Method and Apparatus for The Secure Distributed Storage and Retrieval of Information;

U.S. Patent 5,909,540 issued to Carter et al.: System and Method for Providing Highly Available Data Storage Using Globally Addressable Memory;

Ian Clarke, Oskar Sandberg, Brandon Wiley, and Theodore W. Hong. *Freenet: A Distributed Anonymous Information Storage and Retrieval System*. In Proc. of the ICSI Workshop on Design Issues in Anonymity and Unobservability, Berkeley, CA, 2000. International Computer Science Institute.


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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom Gyorfi whose telephone number is (571) 272-3849. The examiner can normally be reached on 8:00am - 4:30pm Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Vu can be reached on (571) 272-3859. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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